# Rangeland Vegetation

# **Specialist Report**

## Tensleep Watershed Allotments

Baby Wagon S&G
Dry Tensleep C&H
Garnet Creek S&G
Hazelton S&G
Leigh Creek S&G
McLain Lake S&G
Monument C&H
North Canyon C&H
South Canyon C&H
Tensleep Canyon C&H
Upper Meadows S&G
Willow S&G

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Rock Creek C&H Allotment

In Rock Creek Watershed

for

## *"The Big 6"*

## Livestock Grazing Analysis

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## Introduction and Overview

This discussion addresses Rangeland Vegetation within the Tensleep and Rock Creek Watersheds. It describes the affected environment and environmental consequences of alternatives to the proposed action relative to issues that have been developed as described in detail in Chapter 1. Issues identified as key and non-key will be used to compare the effects of the actions for each alternative. They are:

1) Vacant allotments,
2) Aspen stands
3) Riparian vegetation,
4) Upland vegetation
5) Socio/Economic,
6) Wildlife, fish and plant TES species, MIS, and species of local concern
6a) Bighorn Sheep
7) Water quality,
8) Invasive and noxious weeds,

This Rangeland Vegetation Specialist Report will discuss the affected environment and identify effects of actions to 3) Riparian vegetation and 4) Upland vegetation.

The remaining key and non-key issues 1) Vacant allotments, 2) Aspen stands, 5) Socio/Economic, 6) Wildlife, fish and plant TES species, MIS, and species of local concern, 6a) Bighorn Sheep, 7) Water quality, 8) Invasive and noxious weeds are addressed in Wildlife, Economics, Aquatics, Livestock Grazing, and Invasive Species Specialist Reports and project files.

This report is arranged to describe the affected environment and environmental consequences that apply to all allotments in the described area (Watershed-wide) and those that apply to specific allotments only (Allotment specific).

Affected environment descriptions and effects analysis was arrived at through review of PRRD 2210, 2230, and 2240 files, review of the Revised Forest Plan, and other handbook, manual, and internal reference material, along with personal experience of the authors. The analysis included review of livestock grazing reference material from the early 1900's, but focused approximately on the past 20 years. Spatial context was the project area, with the exception of cumulative effects.

Table 4 lists Potential Cumulative Effects Considerations Relevant to Cumulative Effects Analysis. Table 2-5 lists additional management actions that may be conducted on allotments in the analysis area that are either administrative in nature or were analyzed in other NEPA endeavors.

Each alternative that will be analyzed in detail is described in Chapter 1, and summarized below.

**Alternative 1: No Action:** no domestic livestock grazing would be permitted. Improvements not needed for other resource uses would eventually be removed as time and funding allows.

**Alternative 2: Livestock Grazing with Current Management:** Livestock grazing would continue as prescribed under the current allotment management plans (AMPs) or, in the absence of such a plan, under the annual operating instructions (AOIs). Existing improvements would be maintained and would be reconstructed as needed. New improvements not currently authorized under a NEPA decision would not be developed without further NEPA analysis and decision.

**Alternative 3, Proposed Action:** Continuation of livestock grazing under this alternative will use adaptive management to focus on the end results for the resource.

## Affected Environment: Tensleep and Rock Creek *Watershed-wide*

### Riparian and Upland Vegetation, Issues 3 and 4

The Tensleep Watershed is located on the west slope of the Bighorn National Forest, while the Rock Creek watershed is located on the east, as shown on the project area map. Areas described as Rangeland vegetation are lands that include strong representation by herbaceous and graminoid species. Rangelands include, but are not limited to: grasslands, forblands, shrublands, open-canopied forests, and associated riparian, wetland and aquatic areas. Well-managed rangelands provide forage and cover for wildlife and domestic livestock, in addition to high quality water and numerous recreational values. (USDA Forest Service 1996).

The project area is dominated by a diversity of upland species, partly due to differences in topography, precipitation patterns, and elevation. Plant communities include species such as Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass *(Pseudoroegneria spicata).* Plant communities dominated by Willow (Salix sp.) and Sedges (Carex sp.) are common in riparian areas. Sagebrush is common within much of the project area, particularly mid and lower elevations on the west slope. Conifer encroachment into rangeland is common. Sagebrush and conifer encroachment reduces available forage and habitat for livestock and wildlife, and affects biodiversity. Treatment throughout the watersheds is proposed and on-going (NEPA decision June 2006), based largely on the need to maintain rangeland vegetation for livestock grazing.

The project area has been and continues to be grazed by wild ungulates (Elk, Mule deer, Moose). Effects observed include grazing and browsing on aspen, riparian, and wetland vegetation. In the project area some observations have been made of excessive browsing of aspen and willow, most likely by elk, moose, and in some cases cattle. Long-term effects can be reductions in vigor or reproductive ability of these plants and changes in species and plant community composition and cover.

The Forest permits grazing by cattle on lower elevation allotments in the watershed, while much of the higher elevation areas are grazed exclusively by sheep (Specialist Report for Livestock Grazing). Grazing by sheep and cattle has occurred in these areas since the late 1800's. Effects on rangeland vegetation from livestock can be similar to those of wildlife. While some effects are considered acceptable and/or desirable (such as moderate grazing and a diversity of seral stages), in some areas impacts can be concentrated, sometimes affecting the same areas year to year, with undesirable results (such as trailing, erosion, or willow suppression). Such evidence of livestock grazing (permitted cattle or horse, sheep, or possibly non-permitted recreation horse) or wildlife grazing is evident.

The Forest Service implements management of rangelands through avenues such as administration of term grazing permits, coordination of wildlife populations and habitat through the Wyoming Game and Fish Department, vehicular use impacts through travel management, conifer and shrub encroachment through prescribed fire or chemical treatments, and fuels management through fire or removal of wood products.

An update of Rangeland Suitability analysis for allotments in the project area was completed (Attachment A). Desired conditions have been described for the Rangeland Vegetation resource at the Forest Plan scale, they were refined for this project area, and site specific benchmark desired conditions have been described for each allotment (Desired Condition Supplement 1-2 and Table 1-2 Desired conditions and Benchmark Sites). Determinations have been made as to whether current conditions are meeting or moving toward desired conditions at the Benchmark scale (Table 3, Key Areas and Benchmark Sites). All are described in this report on an allotment by allotment basis, as follows. A summary of sagebrush treatment activity in the two watersheds is in Attachment H, Sagebrush treatment Summary.

## Affected Environment: Tensleep and Rock Creek *Allotment Specific*

### Riparian and Upland Vegetation, Issues 3 and 4

#### Baby Wagon S&G

Baby Wagon S&G is a high elevation (9,400 – 11,700 feet) allotment with a short growing season, difficult access, large areas of rock and forested vegetation, and low in forage production. The most updated Rangeland Suitability analysis for Baby ~~w~~Wagon S&G allotment indicated that 1394 acres are Suitable for sheep and goat grazing. It is not considered suitable for use by cattle. Of those acres found to be Suitable, an estimated 394 acres were determined to be riparian (Table 3-1, attached), the remainder is assumed to be upland vegetation.

Rangeland Vegetation on upland and riparian sites is considered meeting desired conditions. Conifer encroachment has been noted in some areas, but not widespread. There are very few areas of sagebrush.

#### Dry Tensleep C&H

Dry Tensleep C&H is mid elevation (7,800 – 9,300 feet) allotment. The most updated Rangeland Suitability analysis indicated that ~~3823~~ 3,495 a~~a~~cres are Suitable for livestock grazing. Of those acres found to be Suitable, an estimated 51 acres were determined to be riparian, the remainder is assumed to be upland vegetation. The Dry Tensleep Allotment is a very dry allotment with isolated areas of riparian found mostly on the east and west borders of the allotment. Rangeland Vegetation on upland and riparian sites is considered meeting or moving toward desired conditions although there is very little riparian to assess.

Conifer encroachment has been noted in some areas, but not widespread. There are extensive areas of sagebrush on the allotment. Prescribed burn treatment has been conducted in the past and additional treatment is planned through the Southwest Fuels management program.

#### Garnet Creek S&G

Garnet Creek S&G is a moderately high elevation (8600 – 9800 feet) allotment with a short growing season, difficult access, large areas of forested vegetation and transitory rangeland. The most updated Rangeland Suitability analysis for Garnet S&G allotment indicated that 1883 acres are Suitable for sheep and goat grazing. Of those acres found to be Suitable, an estimated 254 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Rangeland Vegetation on upland and riparian sites is considered meeting or moving toward desired conditions. Conifer encroachment has been noted in some areas, but not widespread. There are few areas of sagebrush.

#### Hazelton S&G

Hazelton S&G Allotment is a high elevation (9,100 – 10,500 feet) allotment with a short growing season, good access, large areas of rock and some forested vegetation, and some areas low in forage production. The most updated Rangeland Suitability analysis for Hazelton S&G allotment indicated that 1865 acres are Suitable for sheep and goat grazing. Of those acres found to be Suitable, an estimated 315 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate that Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions. Conifer encroachment has been noted in some areas, but not widespread. There are few areas of sagebrush.

#### Leigh Creek S&G

Leigh Creek S&G Allotment ~~ranges~~ is a moderately high elevation (8600 – 9400 feet) allotment , has good access, large areas of forested vegetation, and some areas low in forage production. A historic stock driveway crosses portions of the allotment. The most updated Rangeland Suitability analysis for Leigh Creek S&G allotment indicated that 925 acres are Suitable for sheep and goat grazing. Of those acres

found to be Suitable, an estimated 166 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions with the exception of one small upland site used historically as part of the stock driveway. Conifer encroachment has been noted in some areas, but not widespread. There are few areas of sagebrush.

### McLain Lake S&G

McLain Lake S&G Allotment is a high elevation (9,200 – 11,700 feet) allotment with a short growing season, very difficult access, large areas of rock and forested vegetation, and many areas low in forage production. The most updated Rangeland Suitability analysis for McLain Lake S&G allotment indicated that 2163 acres are suitable for sheep and goat grazing. Of those acres found to be Suitable, an estimated 476 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions. Conifer encroachment has been noted in some areas, but not widespread. There are few areas of sagebrush.

### Monument C&H

Monument C&H is a low to mid elevation (6,800 – 8000 feet) allotment with moderate access and little forested vegetation. The most updated Rangeland Suitability analysis indicated that 1495 acres are Suitable for livestock grazing. Of those acres found to be Suitable, an estimated 19 acres were determined to be riparian, the remainder is assumed to be upland vegetation. The Monument Allotment is a very dry allotment with only isolated areas of riparian found mostly in the southern portion of the allotment associated with the Childs Creek drainage. The Leigh Creek drainage runs along the northern boundary of the allotment however steep terrain and heavily forested vegetation prohibit livestock access.

Benchmark sites indicate that Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions although there is very little riparian vegetation to assess. Conifer encroachment has been noted in some areas. There are extensive areas of sagebrush on the allotment. Prescribed burn treatment has been conducted in the past and additional treatment is planned through the Southwest Fuels management program. (SW Fuels NEPA Decision)

### North Canyon C&H

North Canyon C&H ranges from low to mid elevation (6,800 – 8000 feet), has good access in areas and more difficult in others. Considerable forested vegetation has had logging activity. The most updated Rangeland Suitability analysis indicated that 66964 acres are Suitable for livestock grazing. Of those acres found to be Suitable, an estimated 186 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions. Conifer encroachment has been noted in some areas, but not widespread. There are extensive areas of sagebrush on the allotment. Prescribed burn treatment has been conducted in the past and additional treatment is planned through the Southwest Fuels management program. (SW Fuels NEPA Decision)

### Rock Creek C&H Allotment

Rock Creek C&H Allotment ranges from low to high elevation (6,000 – 10,000 feet), has poor access in most areas, and is described as a sea of forested vegetation with small pockets of rangeland. The most updated Rangeland Suitability analysis for Rock Creek C&H allotment indicated that of a total 30,720 acres, 1278 are considered Suitable for livestock grazing. Of those acres found to be Suitable, an estimated 357 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions. Conifer encroachment has been noted to be extensive in many areas of the allotment, and treatment for removal has been proposed. Only small areas of sagebrush treatment have been noted, and no treatment has been planned or completed. Prescribed burning has been conducted through the South Slope prescribed burn project (South Slope Burn NEPA Decision)

### South Canyon C&H

South Canyon C&H ranges from low to high elevation (6,000 – 9000 feet), has good access in areas and more difficult in others. The most updated Rangeland Suitability analysis for South Canyon C&H allotment indicated that 6459 acres are suitable for livestock grazing. Of those acres found to be Suitable, an estimated ~~186~~ 636 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions. Conifer encroachment has been noted in some areas, and is considered widespread in lower elevation portions. Cheatgrass (*Bromus tectorum*) infestations have increased in recent years in the lower elevation pasture. There are extensive areas of sagebrush on the allotment. Prescribed burn treatment has been conducted in the past and additional treatment is planned through the Southwest Fuels management program. (SW Fuels NEPA Decision)

### Tensleep Canyon C&H

Tensleep Canyon C&H ranges from low to mid elevation (6,900 – 8400 feet), has good access in some areas and more difficult in others. The most updated Rangeland Suitability analysis for Tensleep Canyon C&H allotment indicated that 1323 acres are considered Suitable for livestock grazing. Of those acres found to be Suitable, an estimated 94 acres were determined to be riparian, the remainder is assumed to be upland vegetation. The Tensleep Canyon Allotment is relatively dry with Suitable areas of riparian isolated to the Dry Tensleep drainage in the Willow North unit. The Tensleep Creek drainage runs through the allotment however steep terrain and heavily forested vegetation prohibit livestock access.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions with the exception of one riparian area in lower Dry Tensleep Creek, North Willow Pasture. Conifer encroachment has been noted in some areas, and is considered widespread in lower elevation portions. There are extensive areas of sagebrush on the allotment. Sagebrush treatment has been planned through the Southwest Fuels management program. (SW Fuels NEPA Decision)

### Upper Meadows S&G

Upper Meadows is a high elevation (8800 – 9800 feet) sheep allotment. The most updated Rangeland Suitability analysis for Upper Meadows S&G allotment indicated that 1763 acres are Suitable for sheep and goat grazing. Of those acres found to be Suitable, an estimated 426 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions with the exception of one upland site bench near an area used historically as a bed ground. Conifer encroachment has been noted in some areas, but not widespread. There are few areas of sagebrush.

### Willow S&G

Willow is a high elevation (8500 – 12,000 feet) sheep allotment, although much of the higher elevation portions are not suitable for grazing. Access from the south is good, but very limited as you proceed north on the allotment. The most updated Rangeland Suitability analysis for Willow S&G allotment indicated that 2321 acres are Suitable for sheep and goat grazing. Of those acres found to be Suitable, an estimated 362 acres were determined to be riparian, the remainder is assumed to be upland vegetation.

Benchmark sites indicate Rangeland Vegetation on upland and riparian sites is meeting or moving toward desired conditions. Conifer encroachment has been noted in some areas, but not widespread. There are few areas of sagebrush.

## Environmental Consequences: Tensleep & Rock Creek *Watershed-wide*

Issues 3) Riparian vegetation and 4) Upland vegetation Watershed-wide

Alternative 1 No action no grazing: Direct, Indirect, and cumulative effects:

-Livestock effects to areas of upland and riparian rangeland vegetation (through grazing and browsing on aspen, riparian, and upland vegetation, as well as physical impacts to soil) would no longer occur. In most areas there is no clear separation between effects of livestock and those of wild ungulates, so the changes likely to occur from livestock removal are one of degrees rather than total cessation of all grazing effects. There would likely be some change in reproductive ability of plants and vigor, as well as in species composition, plant community composition, and cover.

-Long-term trend of rangeland vegetation on a landscape scale would likely be toward later seral plant communities, with the exception of small isolated pockets of vegetation where wild ungulate impacts continue to repeatedly occur. Most benchmark sites would be expected to show a trend toward desired conditions.

-Eventually on many sites (dependent upon a wide variety of variables such as time, precipitation, degree of wildlife impacts, site potential, etc) species composition is likely to become less diverse.

-Although elk and deer will continue to use rangeland, excess forage will not be removed annually by livestock, and will accumulate, particularly in areas of high production. The risk of occurrence and rate of spread of wildfire would increase as a result of accumulation of fine fuels.

-In many areas, long-term removal of domestic livestock from rangelands may result in a decrease in species diversity in the plant community where those plant communities are disturbance regime dependent (such as grasslands or many shrublands).

-In portions of Willow S&G and McLain Lake S&G allotments that have been vacant for decades, alternative one would have no effect on rangeland vegetation.

Alternative 2 Current Management: Direct, Indirect, and cumulative effects:

-Livestock effects to areas of upland and riparian rangeland vegetation (through grazing and browsing on aspen, riparian, and upland vegetation, as well as physical impacts to soil) would continue to occur in a manner similar to recent historic patterns and at levels consistent with the revised Bighorn Forest Plan guidelines for forage use.

-Impacts to soil and vegetation by permitted livestock (localized soil compaction, streambank alteration, plant defoliation) would continue to occur within parameters described in the Forest Plan.

-Assuming that stocking levels and seasons of use remain within recent historical levels, reproductive ability of plants and vigor will be maintained, as well as in species, plant community composition, and cover.

-Long-term trend of rangeland vegetation on a landscape scale would likely be toward later seral plant communities with the exception of small isolated pockets where livestock may congregate, or areas of vegetation where wild ungulate impacts continue to repeatedly occur.

-Benchmark sites would be expected to show a trend toward desired conditions, but more slowly than in alternatives 1 and 3.

-Sagebrush treatment and conifer encroachment to maintain rangeland vegetation would continue in accordance with completed NEPA analysis.

Alternative 3 Adaptive management: Direct, Indirect, and cumulative effects:

-Livestock effects to areas of upland and riparian rangeland vegetation (through grazing and browsing on aspen, riparian, and upland vegetation, as well as physical impacts to soil) would occur although to a lesser degree than under Alternative 2. Impacts would be limited to more specific time frames and locales as a result of improvements in controlling livestock distribution.

-Impacts to soil and vegetation by permitted livestock (localized soil compaction, streambank alteration, plant defoliation) would continue to occur within parameters described in the Forest Plan. These effects would be reduced where adaptive improvements have been proposed as part of alternative 3.

-Alternative three would provide additional water points and have more pastures in some rotations, resulting in shorter time of use in each unit, and greater period of non-use. In these cases stock density would be higher and livestock distribution would be improved. Flexibility to control livestock impacts would be greater than alternative two. Plants would have an increased opportunity to recover from grazing impacts and different plants would be grazed by livestock year-to-year and at different times. Plant reproductive ability and vigor would continue to improve in many areas and planned changes in species, plant community composition, and cover would occur more rapidly than under alternative 2.

-Long-term trend of rangeland vegetation on a landscape scale would likely be toward later seral plant communities, with the exception of small isolated pockets of vegetation where wild ungulate impacts would continue to repeatedly occur, or in areas where other activities or impacts are the key factors (conifer encroachment, sage density increase, OHV impacts, etc.).

-Any change of livestock kind from cattle to sheep (on individual or all allotment) would result in less impact to riparian vegetation and stream banks, potential increase in conflicts with recreation users as a result of sheep dogs, possibly less fencing and associated effects due to open herded sheep versus cattle, and increased use of the forb component of rangeland vegetation.

-Benchmark sites not currently considered to be meeting or moving toward desired conditions would be expected to show a more rapid trend toward desired conditions than under Alternative 2.

-Sagebrush and conifer encroachment would continue to be reduced which will increase and maintain forage production and availability for ungulate species as well as other wildlife.

-Springs developed for livestock water in alternative 3 could alter riparian and upland vegetation regimes. Riparian corridors may be slightly smaller near a point of diversion but may be larger or newly developed around an overflow or near livestock watering structures. In both cases, areas altered would be small (< 1 acre)

**Cumulative Effects:**

The activities listed in Table #3-1 (attached) were considered in the cumulative effects analysis for Rangeland Vegetation. The Allotment boundaries and adjacent allotments were considered in this analysis over the time frame that livestock have been authorized on the Forest (1906 to present).

Alternatives 1, 2, and 3

Historic uses continue to be evident in rangeland vegetation today. For example, some areas are continuing to recover from impacts of heavy livestock grazing and trailing in the early 1900's. Riparian areas altered by historic flood events also continue to recover in areas such as Canyon Creek, and likely would under all three alternatives.

Fire suppression activities in the past have resulted in conifer encroachment in many areas, which in turn reduce total acres of rangeland vegetation, as well as forage production and availability. The encroachment may also be reducing the amount of water that filters through the watershed and reaches rangeland vegetation sites, possibly contributing to the drying of these sites, and shifting species composition in some riparian areas. Roads and trails can also channel water and influence a shifting species composition.

Under action alternatives 2 and 3 there would continue to be conflicts about the effects of livestock and wildlife activities, such as willow browse and grazing levels. There would also continue to be effects by livestock due to wildfire and prescribed fire management, and there may be conflicts between livestock grazing and recreation activities that result in bare soils and spread of invasive species.

Under action alternatives 2 and 3 sagebrush treatment and conifer encroachment treatment efforts would continue on all allotments where it is considered necessary in an effort to maintain rangeland vegetation in accordance with completed NEPA analysis.

Expectations are that under all three alternatives the impact of human activities to rangeland vegetation would increase as the population of local communities increases, 'baby-boomers' retire, and as more people nationwide continue to seek places to recreate.

Implementation of adaptive management described in alternative 3 would likely result in less of a cumulative effect to rangeland vegetation than alternative one or two.

## Environmental Consequences: *Allotment Specific*

Issues 3) Riparian vegetation and 4) Upland vegetation

**Babywagon S&G Allotment**

Alternatives 1, 2, and 3:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

**Dry Tensleep C&H Allotment**

Alternatives 1:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternatives 2 and 3:

-Indirect effect from constructing Zaybrook East Allotment Boundary Fence (502200) and Warner East Allotment Boundary Fence (502205) would remove trees for fence line thus creating a very small amount of transitory range.

-Temporary corrals located at gravel pit (< 1 acre) would continue to be authorized under alternatives 2 and 3. The concentrated livestock use for very short time adds nutrients to the soil and disturbance that accelerates revegetation.

**Garnet S&G Allotment**

Alternatives 1:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternative 2 and 3:

-The change of allotment boundary will result in the transfer of a tract (estimated 277 acres) of land considered not suitable from Leigh Creek S&G Allotment to the Garnet Creek S&G Allotment. A small amount of transitory range, however, would be gained by Garnet Allotment.

-Continuing thinning (TSI) projects in the Burn Unit of Garnet S&G will result in increasing the amount of transitory rangeland available.

**Hazelton S&G Allotment**

Alternatives 1, 2, and 3:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

**Leigh Creek**

Alternatives 1:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternatives 2 and 3:

-The change of allotment boundary will result in the transfer of a tract (estimated 277 acres) of land considered not suitable from Leigh Creek S&G Allotment to the Garnet Creek S&G Allotment. A small amount of transitory range, however, would be lost by Leigh Creek S&G Allotment.

**McLain Lake S&G**

Alternative 1: No action no grazing:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternatives 2and 3

-The administrative act of moving the allotment boundaries as proposed would have no effect to rangeland vegetation in alternative 2 or 3, since no suitable rangeland is involved in this action.

**Monument C&H**

Alternatives 1, 2, and 3:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

**North Canyon C&H**

Alternative 1: No action no grazing:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternative 2: Livestock Grazing with Current Management:

~~- Meadowlark Riparian Area Fence (504207) and Meadowlark Riparian Area Tank (504208) spring development, exclosure fence, and pipeline would not be constructed to provide off-stream water for improved control of livestock grazing time, timing, and distribution, and to protect a heritage resource site. As a result, other management actions or a combination of them such as herding and/or shorter period of use with fewer animals would be used. A reduced level of livestock grazing and impacts would likely be applied to much of the High Park Pasture. Fine fuel loading would be greater in that pasture, increasing likelihood of wildfire or prescribed fire.~~

~~-~-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide

Alternative 3: Proposed action with Adaptive Management:

-The change of allotment boundary in lower Tensleep Canyon would result in an addition of 125 acres of Suitable rangeland on the allotment. This area is currently being used, however, so the change would be administrative only, and would have no additional effects to rangeland vegetation beyond alternative 2.

**Rock Creek C&H**

Alternative 1: No action no grazing:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternative 2: Livestock Grazing with Current Management:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternative 3: Proposed action with Adaptive Management:

-Moving the Rock Creek Allotment Boundary Fence, East Half (107005) will eliminate a gate and resolve issues arising from open gates on FDR 368.

-The change of allotment boundary will result in the transfer of a small acreage (40 acres, estimated) of land considered not suitable from Clear Creek C&H Allotment to the Rock Creek C&H Allotment.

**South Canyon C&H**

Alternatives 1 and 3:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternative 2: Livestock Grazing with Current Management::

-Improvement projects listed in Table 2-4. *Adaptive management strategies and triggers for livestock grazing on Tensleep and Rock Creek Watershed allotments* would not be constructed to provide off-stream water and pasture division fences for improved control of livestock grazing time, timing, and distribution, and to protect a heritage resource site. As a result, other management actions or a combination of them such as herding and/or shorter period of use with fewer animals would be used. A reduced level of livestock grazing and impacts would likely be applied to much of the allotment.

**Tensleep Canyon C&H**

Alternative 1: No action no grazing:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternative 2: Livestock Grazing with Current Management:

-Livestock found to be grazing in Section 23, (area "A" supplemental map 1.1) on the Tensleep Canyon Rim, would be considered trespass and their use addressed accordingly. To prevent trespass the adjacent landowner would need to maintain their boundary fences and monitor their livestock use when in the adjacent pasture.

-Livestock use in Sections 13 and 24 (area "E" supplemental map 1.1) would be impractical since the area is not fenced and water is not available. If used without ROW fencing, conflicts with traffic on US Highway 16 would be likely.

Alternative 3: Proposed action with Adaptive Management:

-The change of allotment boundary in lower Tensleep Canyon would result in an addition of 126 acres of suitable rangeland on the allotment.

-The addition of ROW fence and a water tank above the highway in Tensleep Canyon would result in an addition of 116 acres of suitable rangeland on the allotment. Conversely, removing this piece of land from the allotment would remove 116 acres of Suitable range.

-The authorization of livestock grazing and addition to the allotment of section 23 above the rim would result in an addition of 246 acres of suitable rangeland on the allotment.

-The addition of ROW fence, allotment boundary fence, and a water tank above the highway in Tensleep Canyon would result in potential conflicts with elk and deer in their winter range, as well as recreational hikers and climbers in summer.

-Addition of Row fence and water tank above the highway in Tensleep Canyon would introduce grazing to an area not previously grazed. Although this area is permitted to livestock grazing it has not recently been grazed due to inaccessibility. Effects associated with the introduction of livestock grazing in this area would be similar to those described in the allotment-wide discussion above.

**Upper Meadows S&G**

Alternative 1: No action no grazing:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternatives 2and 3

-The administrative act of moving the allotment boundaries as proposed would have no effect to rangeland vegetation in alternative 2 or 3, since no suitable rangeland is involved in this action.

**Willow S&G**

Alternative 1: No action no grazing:

-No direct, indirect, or cumulative effects have been identified beyond those described allotment-wide.

Alternatives 2and 3

-The administrative act of moving the allotment boundaries as proposed would have no effect to rangeland vegetation in alternative 2 or 3, since no suitable rangeland is involved in this action.

## Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

Desired conditions for Upland and Riparian Rangeland Vegetation world be met under all three alternatives analyzed in detail.

## Monitoring Recommendations

Effectiveness (Short-Term) monitoring, in accordance with Forest Plan direction, is completed "as necessary". Frequency is dependent upon the circumstance and not normally specified on a fixed basis. Permittees monitor in real-time as they assess livestock use levels, and the forest conducts spot-checks as necessary.

The Bighorn National Forest Vegetation Grazing Guidelines (USDA Forest Service 2007) directs measurements to be taken and documented within 7 days of livestock leaving a pasture.

Effectiveness (Long-Term) monitoring such as those measured by photo points, species composition changes, etc. is normally not required nor intended to occur annually. Protocols and frequency are described on Table 1-2, Benchmark and Desired Condition. Frequency of monitoring trend is likely to be increased on sites determined to not be meeting or moving toward desired conditions. Table 2-4 (adaptive strategies) also includes triggers which may drive more frequent monitoring.

## References

-Bighorn National Forest Land and Resources Management Plan, Revised 2005
-NEPA Analysis and Decision for Aspen/Meadow Enhancement Treatments, June 2006
-NEPA Analysis and Decision for Southwest Fuels Project, June 2007
-NEPA Analysis and Decision for South Slope Burn Project, Revised 1995
-Bighorn National Forest Vegetation Grazing Guidelines (USDA Forest Service, Revised 2007)
-Attachment A, Rangeland Suitability analysis for Tensleep and Rock Creek Watershed Allotments
-Attachment A1, Forage Allocation
-Attachment G, Suitability Criteria
-Attachment H, Sagebrush Treatment Summary for Tensleep and Rock Creek Watershed Allotments
-Supplement 1-2, Desired Condition for the "Big Six" Project Area
-Table 1-2, Desired Conditions and Benchmark Sites
-Table 3, Key Areas and Benchmark Sites

-Specialist Report for Livestock Grazing for Tensleep and Rock Creek Watershed Allotments
-Rangeland Analysis and Management Training Guide, Region 2, USDA Forest Service 1996
-2210 Files, Powder River Ranger District, Bighorn National Forest, USDA Forest Service